



4 / 17

FIG. 6(a)

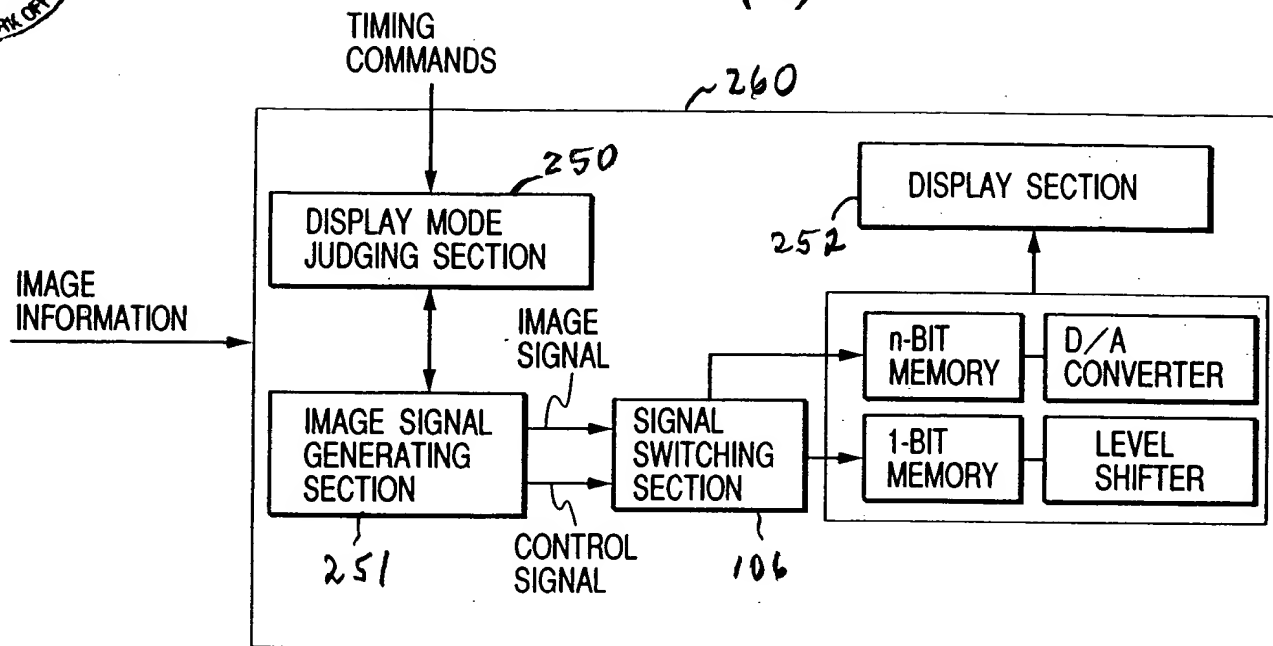
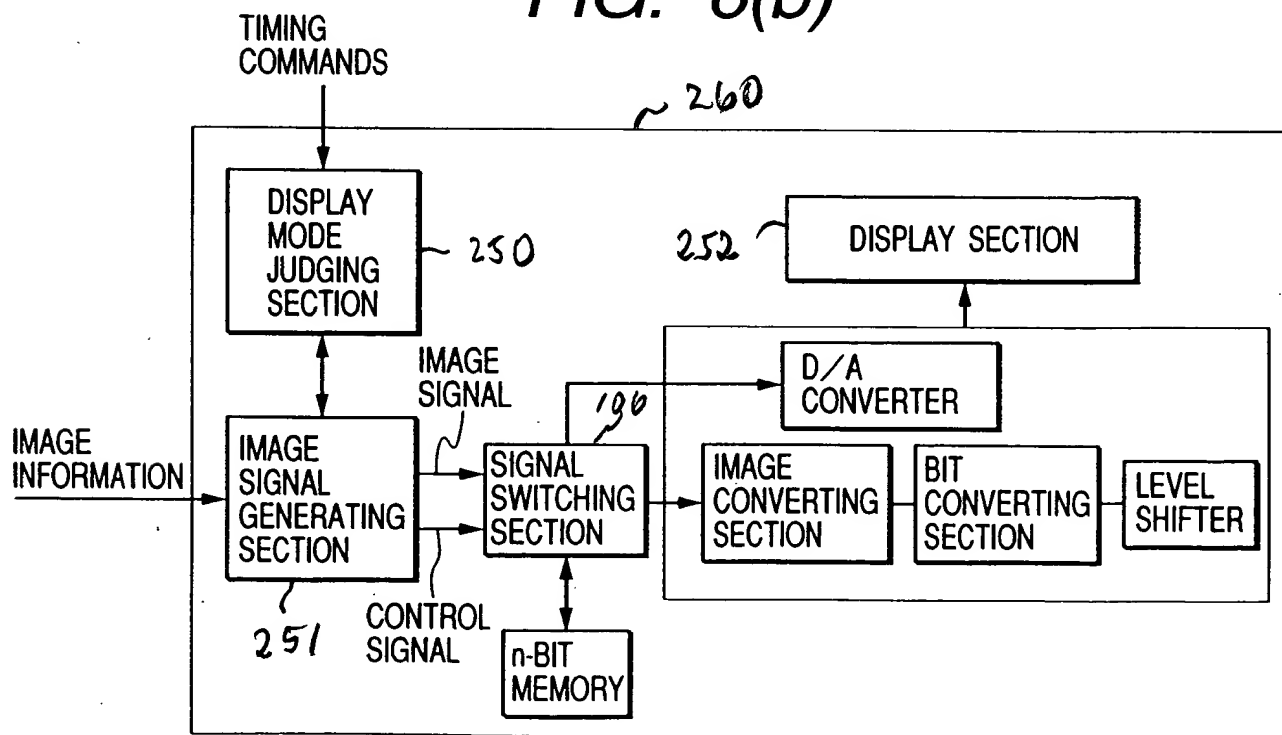


FIG. 6(b)



48. A display device according to claim 47, wherein common wiring of the common electrode is arranged between the organic LED and the liquid crystal layer.

B4 49. A display device according to claim 42, wherein the colored light emitting means enables a color display mode and the reflection means enables a monochromatic display mode, the switching means enabling selection of one of the color display mode and the monochromatic display mode according to the selection of the colored light emitting means and the reflection means.--

REMARKS

By the above amendment, the specification has been amended to correct minor informalities therein, including those noted by the Examiner, and submitted herewith are proposed drawing corrections to Figs. 6(a) and 6(b) to add item numbers as described at page 25 of the specification in accordance with the Examiner's requirements. Also submitted herewith are corrected drawings of Figs. 6(a) and 6(b) and applicants request approval of the proposed drawing corrections and acceptance of the corrected drawings. As such, the objection to the drawings should now be overcome.

Also, by the present amendment, independent claims 1, 4, 5, 33 and 34 have been amended to clarify features of the present invention, with dependent claims being amended to depend from such claims, and claims 3, 9-13, 16-32 and 35-41 being canceled without prejudice or disclaimer of the subject matter thereof. Additionally, new claims 42-49 have been presented, wherein claim 42 is an independent claim and the remaining claims depend directly or indirectly therefrom.

Turning to the objection to the disclosure, applicants note that by the present amendment, the informalities noted by the Examiner at pages 30 and 37 have been

corrected, with page 24 also being corrected. As to the Examiner's indication that all abbreviations in the specification need to be deciphered, applicants are unaware of what abbreviations the Examiner is referring to and if the Examiner points out the abbreviations which are not understood, applicants will indicate the meaning thereof. In this regard, applicants note that page 11, lines 19-21, provide an indication of the meaning of LED and EL thereat. Likewise, page 69, lines 1-4, indicate the meaning of OS and API. Accordingly, applicants have attempted to provide the meaning for various definitions utilized in the specification and applicants intend to cooperate with the Examiner to provide any missing definitions, when such missing definitions are pointed out. Thus, applicants submit that the objection to the specification should now be overcome.

As to the rejection of claims 1-6, 9-10, 17-20, 27-30, 33-36 under 35 U.S.C. 103(a) as being unpatentable over Jacobsen et al (US Patent No. 6,232,937 B1) in view of Hoeksma (US Patent 6,175,353 B1); the rejection of claims 7-8, 11-15, 21-26, 31-32, 39 under 35 U.S.C. 103(a) as being unpatentable over Jacobsen et al and Hoeksma in view of Koh (Patent No. 5,534,883) and further in view of Yamazaki et al (US Patent 6,424,326 B2); the rejection of claim 16 under 35 U.S.C. 103(a) as being unpatentable over Jacobsen et al and Hoeksma in view of Dahm et al (Patent No. 6,466,783 B2); and the rejection of claims 37-38, 40-41 under 35 U.S.C. 103(a) as being unpatentable over Jacobsen et al and Hoeksma in view of Flynn (Patent No. 5,815,228); such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

At the outset, as to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some

objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

Applicants note that the present invention as recited in the independent and dependent claims of this application is directed to a color and black-white (monochromatic) switchable portable terminal and display unit. That is, as described in connection with Figs. 1-5 at page 13, line 21 et. seq. of the specification, in

accordance with the present invention, a light emitting display is performed by field sequential driving of multi-gradation color (color display mode), and reflection display is performed by frame driving of a black-and-white binary display (monochromatic display mode). The field sequential driving of the multi-gradation color is performed at a light emitting display time, since the light emitting display time is a time during which the display unit is used in many cases, and is believed to improve the convenience of a user requiring the display of a larger amount of information with high image quality. The frame driving of the black-and-white binary display is performed at a reflection display time since the reflection display time is a standby time of the display unit in many cases, and it is considered to reduce power consumption while a function property of the display unit is secured. Thus, the present invention optimizes the consumed power and reduces power consumption by switching driving methods in consideration of a function required for the user of each of the color light emitting display time and the reflection display time.

By the present amendment, the claims of this application have been amended to clarify the features of the present invention with independent claims 1, 4, 5, 33 and 34 being amended to clarify the features regarding provision of both a color display mode and a monochromatic display mode. More particularly, claim 1 recites the feature of switching means enables selection of one of the color display mode and the monochromatic display mode as the display mode of the image display in the image display section, with independent claims 4 and 5 reciting the feature of a display mode judging section for judging one of a color display mode and a monochromatic display mode as a display mode of the image displayed in the display section with control being effected in the manner corresponding thereto. Independent claims 33 and 34 have also been amended with claim 33 reciting a portable terminal having a mode switching section for switching to one of a color display mode and a monochromatic display mode as a display mode of the image

displayed in the liquid crystal cell, whereas claim 34 has been amended to recite a display element for enabling a color display and a monochromatic display. New independent claim 42 recites the feature of color light emitting means for emitting color light, reflection means for reflecting external light to perform a light emitting display, light polarizing state modulating means for modulating a polarizing state of the color light to perform a reflection display, and switching means for selecting one of the color light emitting means and the reflection means on the basis of a received image signal. As described above with regard to the specification, the color light emitting means for emitting colored light effects a color display mode, whereas the reflection display effects a monochromatic display mode as recited in dependent claim 49, for example. Thus, it is apparent that each of independent claims 1, 4, 5, 33 and 34, as amended, as well as new independent claim 42 and the dependent claims thereof recite the feature of a color display mode and a monochromatic display mode which features are not disclosed or taught in the cited art, as will become clear from the following discussion.

Turning to Jacobsen et al, applicants note that the Examiner indicates that Jacobsen et al teaches a portable information terminal having a color display mode as a display mode of the image displayed in a display section. The Examiner recognizes that "Jacobsen et al does not teach a monochromatic display mode" (emphasis added). The Examiner recognizing this deficiency of Jacobsen et al cites Hoeksma indicating that Hoeksma shows the monochromatic display mode with the Examiner contenting "It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the a monochromatic display mode as shown by Hoeksma in the Jacobsen et al portable information terminal in order to increase power conservation in battery powered portable information terminal." (emphasis added) Applicants submit that this position by the Examiner is a hindsight

reconstruction attempt utilizing the principle of "obvious to try" which is not the standard of 35 U.S.C. 103. See In re Fine, supra.

That is, applicants submit that as recognized by the Examiner, Jacobsen et al does not disclose a monochromatic display mode in addition to the disclosed color display mode, and thus Jacobsen et al provides no disclosure or teaching of a switching means for selecting one of the color display mode and the monochromatic display mode as disclosed and claimed herein. Furthermore, irrespective of the position by the Examiner, applicants submit that Hoeksma apparently only discloses a monochromatic display mode together with a backlight control for viewing symbols under low ambient light levels without illuminating the entire viewing screen, thereby conserving power in an on-board battery as set forth in the abstract of such patent. Accordingly, Hoeksma like Jacobsen et al does not disclose or teach a color display mode and a monochromatic display mode and switching means for selecting one of the color display mode and the monochromatic display mode as a display mode of the image to be displayed. Applicants submit that the proposed combination of Jacobsen et al and Hoeksma fails to disclose or teach the claimed features of this application in the sense of 35 U.S.C. 103 and applicants submit that all claims present in this application patentably distinguish over this proposed combination of references in the sense of 35 U.S.C. 103, and should be considered allowable thereover. Applicants note further that as pointed out above, new independent claim 42 recites the color light emitting means which enable a color display mode and the reflection means to perform a light emitting display which enables the monochromatic display mode for selecting one of the color light emitting means and the reflection means on the basis of a received image signal and applicants submit that claim 42 thus also defines the different display modes and the selection of one of the display modes which feature is also not disclosed or taught by Jacobsen et al taken alone or in combination with Hoeksma in the sense of 35 U.S.C. 103. As

such, applicants submit that all independent claims in this application and therewith the dependent claims patentably distinguish over this proposed combination of references in the sense of 35 U.S.C. 103 and all claims should be considered allowable thereover.

With respect to the dependent claims and the other references utilized in addition to the combination of Jacobsen et al and Hoeksma, applicants submit that Koh, Yamazaki et al, Dahm et al and Flynn, as utilized by the Examiner, also fail to disclose or teach the recited features of the independent and dependent claims in the sense of 35 U.S.C. 103. As such, applicants submit that irrespective of the Examiner's position, none of the cited art taken alone or in any combination thereof disclose or teach the claimed invention, and all claims patentably distinguish thereover.

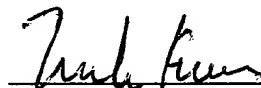
Applicants note that the Examiner while recognizing in section 4 at page 3 of the Office Action that "Jacobsen et al does not teach a monochromatic display mode", contends in the last paragraph of page 6 of the Office Action that Jacobsen et al, with respect to claim 6, shows the mode of operation, where large size of black and white characters shown on display using software and monochromatic mode (see Fig. 8D-8E, in description see col. 18, lines 42-52). Applicants submit that contrary to the position set forth by the Examiner, col. 18, lines 42-45 of Jacobsen et al merely discloses a function of changing the image size on the screen variably (for example, enlargement or reduction of the size of characters) and does not disclose a monochromatic display mode in addition to a color display mode, which the Examiner has recognized, is not taught by Jacobsen et al. Applicants further note that with respect to the features of claim 6, applicants submit that Jacobsen et al does not disclose a frequency control section for switching the control of an operating frequency of the signal processing section in accordance with the control signal from the signal generating section as recited in dependent claim 6, which

incorporates the features of parent claim 4 therein, which features are not disclosed or taught by Jacobsen et al taken alone or in combination with the other cited art. Likewise, applicants submit that the Examiner's position with respect to other features of the dependent claims is in error in relation to the claimed features when considered in conjunction with the parent claims. Accordingly, applicants submit that all claims patentably distinguish over the cited art and should now be in condition for allowance.

In view of the above amendments and remarks, applicants submit that all claims present in this application patentably distinguish over the cited art and should now be in condition for allowance. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (503.39687X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 24, please amend the paragraph beginning at line 17 as follows:

The operation and effects of the display unit shown in Fig. 4 will be explained. A memory control section 246 stores a supplied image signal to a necessary area of the n-bit memory 241 in accordance with a control signal. The image signal supplied to the memory control section 246 in this example is set to a combination of an n-bit gradation signal and a 1-bit gradation signal. When the n-bit gradation display is performed, the n-bit gradation signal is supplied to the D/A converter 243. In contrast to this, when the 1-bit gradation display is performed, the 1-bit gradation signal is supplied to the level shifter 244. The D/A converter 243 generates an image signal of analog gradation, and the level shifter 244 generates an image signal of binary gradation. One of the image signals generated through the signal control section 245 is supplied to the display element 101. In view of the consumed power, it is desirable to construct the display unit such that a clock is supplied to only one of the D/A converter 243 and the level shifter ~~245~~244 depending on whether n-bit gradation display or 1-bit gradation display is to be performed.

Page 30, please amend the paragraph beginning at line 16 as follows:

A waveform 151 of Fig. 7(b) is shown in accordance with a gate line of Fig. 7(a). The respective waveforms show response waveforms of liquid crystal molecules in pixels corresponding to a k-th gate line ($k=1$ to m) and an $n\bar{m}$ -th signal line (final line).

Page 37, please amend the paragraph beginning at line 20 as follows:

A twist nematic mode for setting a twist angle to 90 degrees is adopted in the liquid crystal layer 122. An orientation film for orientating the liquid crystal is formed

on liquid crystal layer contact sides of the transparent substrate 121 and the active matrix substrate 123, although this construction is omitted in ~~Fig. 8~~ Figs. 9(a) and 9(b). Further, the cell gap, which is the distance between the transparent substrate 121 and the active matrix substrate 123, is set to 2 μm in consideration of high speed response of the liquid crystal. If the field sequential color display can be performed, another display mode can be also applied naturally. When the display element is used in a portable information terminal, there are many cases in which this display unit is seen from a lower side. Therefore, an angle of visual field is symmetrically set on left-hand and right-hand sides, and is set to be wide from the lower side, and is set to be narrow on an upper side so that convenience is usefully improved. These constructions can be adjusted by the rubbing angle.

IN THE CLAIMS:

Please amend claim 1 as follows:

1. (amended) A portable information terminal comprising:
a display section for displaying an image corresponding to a received image signal;
a light source for supplying light to the display section; and
a driving section for controlling an operation of said display section;
wherein the portable information terminal has a color display mode and a monochromatic display mode as a display mode of the image displayed in said display section, and switching means enables selection of one of the color display mode and the monochromatic display mode as the display mode of the image displayed in said display section.

Please cancel claim 3 without prejudice or disclaimer of the subject matter thereof.

Please amend claims 4-8 as follows:

4. (amended) A display device comprising:
a display section for displaying an image corresponding to a received image signal; and
a light source for supplying light to the display section;
said device further comprising:
a display mode judging section for judging one of a color display mode and a monochromatic display mode as a display mode of the image displayed in said display section;
a signal generating section for generating a control signal and an image signal corresponding to the display mode of said display section in accordance with instructions of the display mode judging section;
a signal processing switching section for switching a signal processing path in accordance with the control signal from the signal generating section;
a signal processing section for processing the image signal in accordance with the switching of the signal processing path of said signal switching section; and
a light source control section for controlling an operation of said light source in accordance with instructions from said signal switching section.

5. (amended) A display device comprising:
a display section for displaying an image corresponding to a received image signal; and
a light source for supplying light to the display section;
said device further comprising:
a display mode judging section for judging one of a color display mode and a monochromatic display mode as a display mode of the image displayed in said display section;
signal generating section for generating an image signal corresponding to the display mode of said display section by instructions of said display mode judging section;

a signal processing switching section for switching a signal processing path by instructions from said display mode judging section;

a signal processing section for processing the image signal in accordance with the switching of the signal processing path of said signal switching section; and

a light source control section for controlling an operation of said light source in accordance with instructions from said signal switching section.

6. (amended) A display device according to claim 4, wherein the device further comprises a frequency control section for switching the control of an operating frequency of said signal processing section in accordance with said control signal from said signal generating section.

7. (amended) A display device according to claim-34, wherein said signal processing section has an n-bit memory, a digital-analog converter connected to the n-bit memory, a 1-bit memory, and a level shifter connected to the 1-bit memory; and the display mode displayed by said display section has a multi-gradation display mode and a two-gradation display mode;

in the case of the multi-gradation display mode, said signal processing switching section selects said n-bit memory in said signal processing section, and said signal processing section processes the image signal generated by said signal generating section, by said n-bit memory and said digital-analog converter connected to the n-bit memory (n is a natural number equal to or greater than 2); and

in the case of the two-gradation display mode, said signal processing switching section processes the image signal generated by said signal processing section by said 1-bit memory and said level shifter.

8. (amended) A display device according to claim 34, wherein said device has an n-bit memory (n is an integer equal to or greater than 2) connected to said signal processing switching section; and

the display mode displayed by said display section has a multi-gradation display mode and a two-gradation display mode;

when said display mode judging section judges the multi-gradation display mode, said signal processing switching section selects said digital-analog converter, and processes the image signal held in said n-bit memory connected to said signal processing section by said digital-analog converter; and

when said display mode judging section judges the two-gradation display mode, said signal processing switching section selects said level shifter, and processes the image signal held in said n-bit memory connected to said signal processing section by said level shifter.

Please cancel claims 9-13 without prejudice or disclaimer of the subject matter thereof.

Please amend claims 14 and 15 as follows:

14. (amended) A display device according to claim ~~9 or 10~~ 4, wherein the device further comprises a frequency control section for controlling a clock frequency in accordance with instructions of said signal processing switching section.

15. (amended) A display device according to ~~3~~ claim 4, wherein switching timing of the display mode switched by said display mode judging section is set by the operation of a user.

Please cancel claims 16-32 without prejudice or disclaimer of the subject matter thereof.

Please amend claims 33 and 34 as follows:

33. (amended) A portable terminal comprising:
a liquid crystal cell for displaying an image;

a light source for making light incident to said liquid crystal cell;

a mode switching section for switching to one of a color display mode and a monochromatic display mode as a display mode of the image displayed in said liquid crystal cell;

a light source control section controlled by said mode switching section, and controlling an operation of said light source; and

an image generating section for generating an image signal corresponding to said display mode.

34. (amended) A display element for enabling a color display mode and a monochromatic display mode, comprising:

a liquid crystal cell having a pair of transparent substrates, a liquid crystal layer nipped between the pair of transparent substrates, and an electrode group arranged in said pair of transparent substrates;

a light polarizing maintaining diffusion reflection plate arranged on one face side of said liquid crystal cell;

a light guide body arranged between said liquid crystal cell and said light polarizing maintaining diffusion reflection plate such that a light source is arranged on a side face of the light guide body; and

a light polarizing maintaining type scattering layer arranged between said light guide body and said liquid crystal cell.

Please cancel claims 35-41 without prejudice or disclaimer of the subject matter thereof, and add the following new claims:

--42. A display device comprising:

colored light emitting means for emitting colored light;

reflection means for reflecting external light to perform a light emitting display;

light polarizing state modulating means for modulating a polarizing state of the colored light to perform a reflection display; and

switching means for selecting one of the colored light emitting means and the reflection means on the basis of a received image signal.

43. A display device according to claim 42, wherein the light emitting display is performed in a multi-gradation color mode and the reflection display is performed in a two-gradation mode.

44. A display device according to claim 42, including a liquid crystal cell for enabling display.

45. A display device according to claim 42, wherein the reflection means comprises a light polarizing maintaining a scattering layer.

46. A display device according to claim 42, wherein the colored light emitting means comprises an organic LED layer, the rejection means comprises an anode of the organic LED, and the light polarizing state modulating means comprises a polarizing plate, a phase difference plate and a liquid crystal layer.

47. A display device according to claim 46, further comprising a common electrode which functions as both an electrode operating the organic LED and an electrode operating the liquid crystal layer, the electrodes having the same electric potential.

48. A display device according to claim 47, wherein common wiring of the common electrode is arranged between the organic LED and the liquid crystal layer.

49. A display device according to claim 42, wherein the colored light emitting means enables a color display mode and the reflection means enables a

monochromatic display mode, the switching means enabling selection of one of the color display mode and the monochromatic display mode according to the selection of the colored light emitting means and the reflection means.--